

### **REMARKS**

The Office Action mailed June 4, 2003 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-39 and 41 are now pending in the application. Claims 1-12 stand rejected. Claims 13-24 are allowed. Claims 25-39 have been withdrawn. Claim 40 has been cancelled. Claim 41 stands objected to.

The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

### **Restriction Requirement Under 35 U.S.C. § 121**

Applicants affirm the provisional election, made during a telephone conversation with the Examiner on March 17, 2003, to prosecute Group I, Claims 1-24 and 41, with traverse. Applicants respectfully submit that examining all the claims, i.e. Claims 1-39 and 41 will not pose an undue burden on the Examiner.

### **REJECTION UNDER 35 U.S.C. § 102**

1. Claims 1, 2 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by McGinnis et. al. (U.S. Pat. No. 5,603,990). This rejection is respectfully traversed.

As amended, Claim 1 recites, "A method of forming an ablative structure, the method comprising the steps of: applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material; mixing an intumescent material with a second quantity of the low temperature ablative material; and applying the intumescent material mixed with the second quantity of the low

temperature ablative material over the first quantity of the low temperature ablative material."

The amendment to Claim 1 reciting, "applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material", is supported throughout the specification. See paragraph 12, lines 3-7; paragraph 17, lines 1-3; paragraph 26, lines 1-6; paragraph 27, lines 1-6; and paragraph 29, lines 1-4. More specifically, paragraph 12, lines 3-7; paragraph 26, lines 1-6; and paragraph 27, lines 1-6 clearly describes a first step wherein a first quantity of low temperature ablative (LTA) material 16 is first applied to the substrate, and a second step wherein an intumescent material is mixed with a second quantity of the LTA material 16. Thus, since the second step involves mixing an intumescent material with the LTA material 16, one of ordinary skill in the art would certainly understand this to describe LTA material 16 to be absent the intumescent material prior to the second step. Otherwise, there would be no need to describe the present invention to include the second step of mixing the intumescent material with the LTA material 16. Furthermore, paragraph 17, lines 1-3 and paragraph 29, lines 1-4 clearly describe the LTA material 16 to be a different material than the intumescent material, and not a mixture thereof. Therefore, LTA 16 is clearly described throughout the specification to be an ablative material absent an intumescent material.

McGinnis et. al. does not describe or suggest a method of forming an ablative structure comprising applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material and mixing an intumescent material with a second quantity of the low temperature ablative material. Rather, McGinnis et. al. describes a method for thermally protecting a substrate having a surface exposed to a flame environment. The method involves coating the surface of

the substrate with a first coating layer that is thermally decomposable upon exposure to the flame environment to form a first carbonific char that intumesces to form a rigid carbonific char foam. The method further involves coating the first film layer with a second film layer that is thermally decomposable upon exposure to the flame environment to form a second carbonific char that intumesces to form an insulative carbonific char foam having a density about half the density height of the rigid carbonific char foam. Thus, McGinnis et. al. describes both the first and second film layers to include an intumescent material. Therefore, McGinnis et. al. does not describe a method of forming an ablative structure that comprises applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material. Furthermore, McGinnis et. al. does not describe a method of forming an ablative structure that includes the step of mixing an intumescent material with a second quantity of the low temperature ablative material.

For at least the reasons set forth above, Applicants respectfully submit that Claim 1, as amended, is patentable over McGinnis et. al..

Claims 2 and 7 depend directly from Claim 1. When the recitations of Claims 2 and 7 are considered in combination with the recitations of Claim 1, Applicants submit that Claims 2 and 7 are likewise patentable over McGinnis et. al..

2. Claim 40 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Amos et. al. (U.S. Pat. No. 4,658,728). This rejection is respectfully traversed.

As amended, Claim 40 recites, "A method of forming an ablative structure, the method comprising the steps of: mixing a quantity of intumescent material with a low temperature ablative material, wherein the intumescent material is disposed within the low temperature ablative material in increasing amounts towards an outer

surface of the ablative structure, thereby forming a gradient of intumescent material; and applying the quantity of intumescent material mixed with the low temperature ablative material to a substrate."

Amos et. al. neither describes nor suggests a method of forming an ablative structure that includes mixing a quantity of intumescent material with a low temperature ablative material, wherein the intumescent material is disposed within the low temperature ablative material in increasing amounts towards an outer surface of the ablative structure, thereby forming a gradient of intumescent material. Rather, Amos et. al. describes a projectile component having a thermally ablative outer layer. The ablative outer layer is applied by immersing and continuously agitating the projectile in a fluidized bed of resin powder.

For at least the reasons set forth above, Applicants respectfully submit that Claim 40, as amended, is patentable over Amos et. al..

For the reasons set forth above, Applicants respectfully request that the §102 rejection of Claims 1, 2, 7 and 40 be withdrawn.

### **REJECTION UNDER 35 U.S.C. § 103**

3. Claims 3-6 and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinnis et. al. (U.S. Pat. No. 5,603,990). This rejection is respectfully traversed.

Claims 3-6 and 8-10 depend, directly or indirectly, from Claim 1. As set forth above, McGinnis et. al. does not describe, show or suggest the features of the present invention recited in Claim 1. Therefore, as set forth above, Applicants submit that Claim 1 is patentable over McGinnis et. al..

When the recitations of Claims 3-6 and 8-10 are considered in combination with the recitations of Claim 1, Applicants submit that Claims 3-6 and 8-10 are likewise patentable over McGinnis et. al..

4. Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinnis et. al. (U.S. Pat. No. 5,603,990) in view of Deogan et. al. (U.S. Pat. No. 5,900,281). This rejection is respectfully traversed.

Claim 11 depends directly from Claim 1. The recitation of Claim 1 is set forth above.

Neither McGinnis et. al. nor Deogan et. al. describe, show or suggest a method of forming an ablative structure comprising applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material and mixing an intumescent material with a second quantity of the low temperature ablative material. As set forth above, McGinnis et. al. does not describe, show or suggest the features of the present invention recited in Claim 1. Additionally, Deogan et. al. describes a intumescent composition for protecting a substrate against fire and thermal extremes. The composition includes a film-forming resinous binder, a catalyst for curing the binder, a blowing agent, a material which undergoes endothermic phase change, and a small amount of platinum.

Thus, neither McGinnis et. al. nor Deogan et. al. describe a method of forming an ablative structure that includes applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material and mixing an intumescent material with a second quantity of the low temperature ablative material. Therefore, for at least the reasons set forth above, Applicants respectfully submit that Claim 1 is patentable over McGinnis et. al. in view of Deogan et. al..

Accordingly, when the recitations of Claim 11 are considered in combination with the recitations of Claim 1, Applicants submit that Claim 11 is likewise patentable over McGinnis et. al. in view of Deogan et. al.

5. Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over McGinnis et. al. (U.S. Pat. No. 5,603,990) in view of Tzur (U.S. Pat. No. 4,632,865). This rejection is respectfully traversed.

Claim 12 depends directly from Claim 1. The recitation of Claim 1 is set forth above.

Neither McGinnis et. al. nor Tzur describe, show or suggest a method of forming an ablative structure comprising applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material and mixing an intumescent material with a second quantity of the low temperature ablative material. As set forth above, McGinnis et. al. does not describe, show or suggest the features of the present invention recited in Claim 1. Additionally, Tzur describes a multi-layer insulative structure wherein the layers are arranged so that the external layer has a higher melting temperature or temperature of dehydration than any other layer. Two outer layers contain hydrated inorganic salts containing a high percentage of sublimated water molecules. A central layer is a foam of either polyurethane or phenolic resin, and an internal layer contains salt that has a melting temperature equal to a maximum allowed temperature. Each layer is a rubberized and has a layer of aluminum foil therebetween.

Thus, neither McGinnis et. al. nor Tzur describe a method of forming an ablative structure that includes applying to a substrate a first quantity of a low temperature ablative material that is absent an intumescent material and mixing an intumescent material with a second quantity of the low temperature ablative material.

Therefore, for at least the reasons set forth above, Applicants respectfully submit that Claim 1 is patentable over McGinnis et. al. in view of Tzur.

Accordingly, when the recitations of Claim 11 are considered in combination with the recitations of Claim 1, Applicants submit that Claim 11 is likewise patentable over McGinnis et. al. in view of Tzur.

For the reasons set forth above, Applicants respectfully request that the §103 rejection of Claims 3-6, 8-10, 11 and 12 be withdrawn.

**ALLOWABLE SUBJECT MATTER**

The Office states that claim 41 would be allowable if rewritten in independent form. Accordingly, Applicants have amended claim 41 to include the limitations of the base claim and any intervening claims. Therefore, claim 41 should now be in condition for allowance.

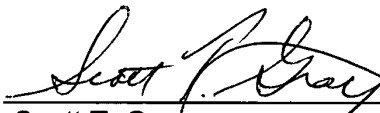
Applicants gratefully acknowledge the allowance of Claims 13-24.

**CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7500.

Respectfully submitted,

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